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Typical tasks performed by service routers:
– Data routing
– Construction of secure network perimeter (Firewall)
– Network attacks prevention and monitoring (IPS/IDS)
– Service quality monitoring (SLA)
– Filtering of network data by various criteria (including filtering by applications)
– Organization of secure network tunnels between different offices of a company
– Remote connection of staff members to office
– Management and distribution of Internet channel width within an office by using QoS
– Organization of redundant connection (by means of wires or 3G/LTE modem)
– User termination and bandwidth limiting – BRAS (IPoE)

Performance
The key elements of ESR series are data processing hardware acceleration means that ensure a high level of performance. Hardware and software processing is distributed among the units of the device.

ESR-10, ESR-12V, ESR-12VF, ESR-14VF

ESR-10, ESR-12V(F), ESR-14VF functional area

ESR-10, ESR-12V, ESR-12VF and ESR-14VF service routers are designed to be used for connection of small and middle-sized offices in enterprise networks.

Firewall and router functionality provides security of different types of Internet connection.

ESR-12V, ESR-12VF, ESR-14VF have FXS ports to connect up to 3 analogue phones to an enterprise network without using gateways. FXO port provides phone redundancy via analogue line in case of central PBX connection failure.
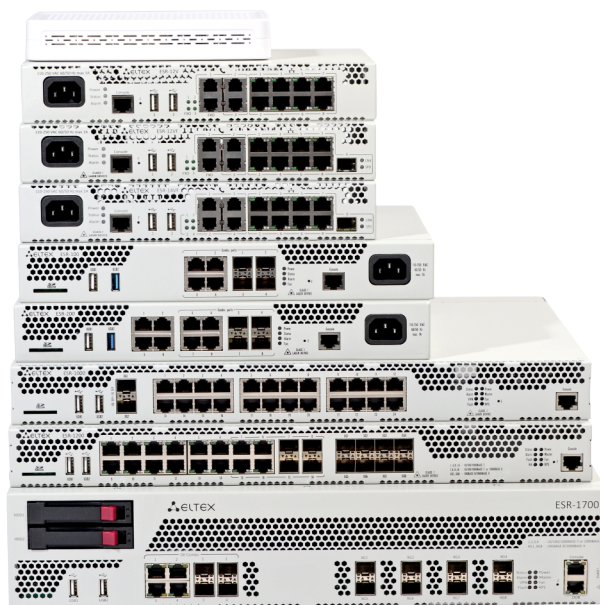
The ESR-14VF model differs in that it has 4 FXS ports and no FXO ports.

– Solution for small and middle-sized offices
– Flexible service configuration
– Interfacing with the equipment of leading manufacturers
– FXS ports for phone connection
– FXO port for connection redundancy
– Firewall and router functionality

ESR-20, ESR-21

ESR-20/21 functional area

ESR-20 and ESR-21 are multipurpose service routers developed in compliance with requirements of energy and oil-and-gas industries. The devices support advanced routing, WAN organization and network security functions.

The main feature of ESR-21 is the presence of additional RS-232 ports that can be used for implementing additional functionalities – remote device management via console (AUX mode) and connecting wired/GSM modems to firewalls.

ESR-20

ESR-21

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ESR-100, ESR-200, ESR-1000, ESR-1200, ESR-1500, ESR-1700

ESR-100/200/1000/1200/1500/1700 functional area

The family of ESR routers is a universal hardware platform capable of performing a wide range of tasks related to network security, data encryption, user termination etc. The product line includes models that can be used in networks of various sizes - from small enterprise networks to carrier networks and data centers.
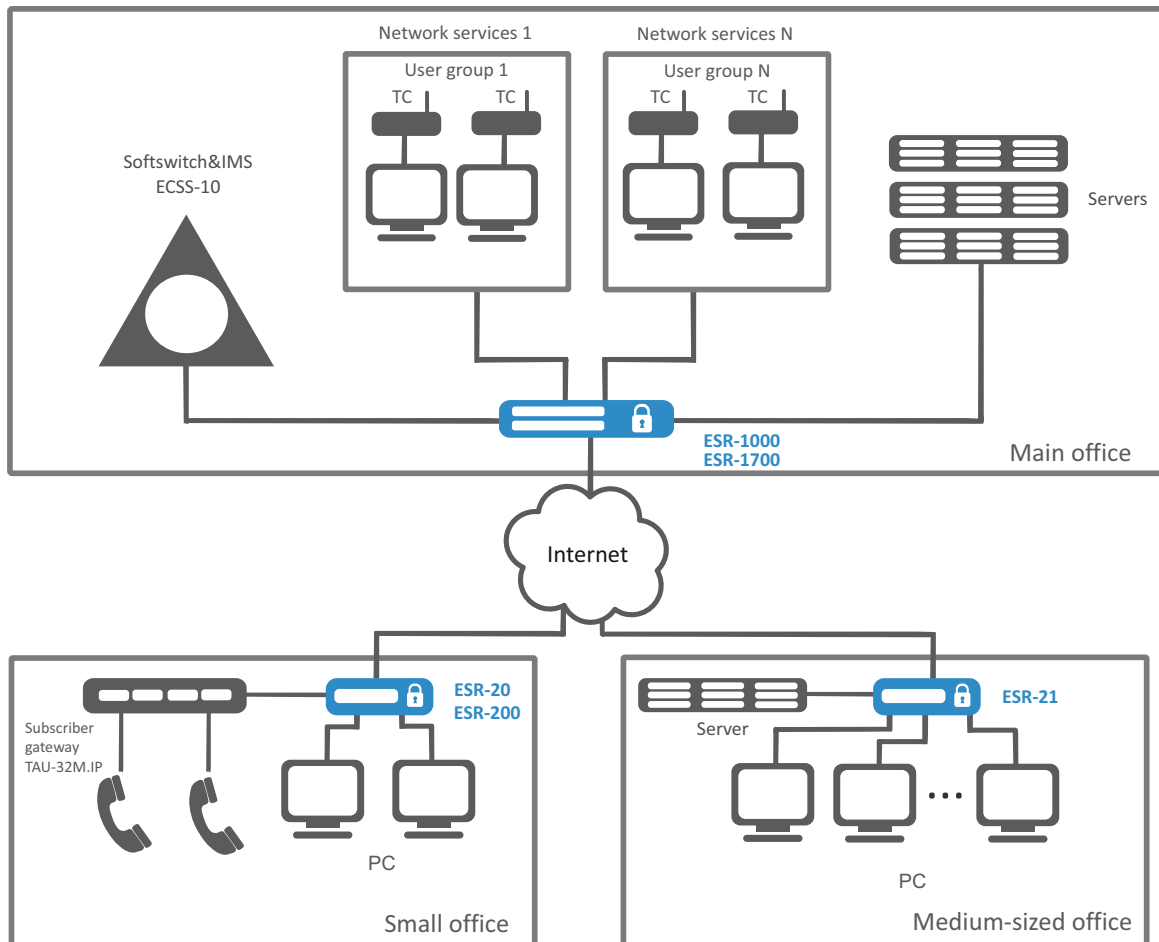
ESR-1500

– Scalable solution for different fields of application
– Flexible service configuration
– Interfacing with the equipment of leading manufacturers
– Hardware acceleration of data processing

Use case

The model scheme for enterprise networks:

ESR-10/12V/12VF/14VF/20/21/100/200 technical features

	ESR-10	ESR-12V	ESR-12VF	ESR-14VF	ESR-20	ESR-21	ESR-100	ESR-200
General parameters								
Packet processor	Broadcom NS+ (BCM58625)				Broadcom NS2		Broadcom XLP104	Broadcom XLP204
Interfaces								
Combo 10/100/1000BASE-T/ 1000BASE-X SFP (LAN/WAN)	—	—	—	—	2	—	4	4
Ethernet 10/100/1000BASE-T (LAN/WAN)	4	8	8	8	2	8	—	4
Ethernet 10/100/1000BASE-X SFP (LAN/WAN)	2	—	1	1	—	4	—	—
Serial (RS-232)	—	—	—	—	—	3	—	—
Console (RJ-45)	1							
FXS	—	3	3	4	—	—	—	—
FXO	—	1	1	—	—	—	—	—
USB 2.0	2				1			
USB 3.0	—				1			
SD-порт	—				1			
Performance								
Firewall/NAT/routing (1518B frames)	0.32 Gbps 26k pps				1.84 Gbps 162k pps	2.1 Gbps 174k pps	1.3 Gbps 109k pps	1.89 Gbps 155k pps
IPsec VPN (1456B frames)	153 Mbps 13k pps				0.52 Gbps 44k pps	0.53 Gbps 46k pps	0.29 Gbps 25k pps	0.46 Gbps 39k pps
IPS/IDS 10k rules	59.51 Mbps 12.7k pps				150.63 Mbps 32.2k pps		46 Mbps 11.3k pps	80.33 Mbps 17.21k pps
System features								
VPN tunnels	10				250			
Static routes	1k				11k			
Concurrent sessions	4k				256k			
VLAN support	up to 4k active VLANs in accordance with 802.1Q							
BGP routes	800k				1.5M			
OSPF routes	30k				300k			
RIP routes	10k							
MAC table	2k entries per bridge							
FIB size	800k				1.4M			
VRF Lite	32							

Functionality for firmware version 1.12.0

ESR-1000/1200/1500/1700 technical features

	ESR-1000	ESR-1200	ESR-1500	ESR-1700
General parameters				
Packet processor	Broadcom XLP316L		Broadcom XLP516	Broadcom XLP780
Interfaces				
Combo 10/100/1000BASE-T/ 1000BASE-X SFP (LAN/WAN)	—	4	4	4
Ethernet 10/100/1000BASE-T (LAN/WAN)	24	12	4	—
10GBASE-R SFP+/1000BASE-X (LAN/WAN)	2	8	4	8
Console (RJ-45)	1			
USB 2.0	2			
HDD connection socket	—			2
SD port	2			—
Performance				
Firewall/NAT/routing (1518B frames)	8.9 Gbps 736k pps		12.5 Gbps 1032k pps	39 Gbps 3216k pps
IPsec VPN (1456B frames)	2.37 Gbps 203k pps		3 Gbps 257k pps	13.4 Gbps 1151k pps
IPS/IDS 10k rules	402.58 Mbps 86.25k pps		797 Mbps 171k pps	3670 Mbps; 785k pps
System features				
VPN tunnels	500			
Static toutes	11k			
Concurrent sessions	512k			
VLAN support	up to 4k active VLANs in accordance with 802.1Q			
BGP routes	2.8M			
OSPF routes	500k			
RIP routes	10k			
MAC table	16k	128k		
FIB size	1.7M			3.0M
VRF Lite	32			

Functionality for firmware version 1.12.0

Physical specifications

	ESR-10	ESR-12V	ESR-12VF	ESR-14VF	ESR-20	ESR-21	ESR-100	ESR-200
Physical specifications and ambient parameters								
Maximum power consumption	9 W	22 W			25 W	32 W	20 W	25 W
Maximum noise level	—						57 dB	
Power supply	220 VAC (via 12V, 1.5A power adapter)	100-264 VAC, 60/50 Hz						
Operating temperature	from 0 to +40 °C				from -10 to +45 °C			
Storage temperature	from -40 to +70 °C							
Operating humidity	no more than 80%							
Storage humidity	from 10% to 95%							
Dimensions (WxDxH, mm)	185x32x118	267x43.6x160.5			267x44x212	430x44x225	310x44x240	
Weight	1 kg				2 kg	3.15 kg	2.5 kg	
Average service life	at least 15 years							

	ESR-1000	ESR-1200	ESR-1500	ESR-1700
Physical specifications and ambient parameters				
Maximum power consumption	75 W	85 W	125 W	250 W
Maximum noise level	58 dB		70 dB	
Power supply	100-240 VAC, 60/50 Hz 36 .. 72 VDC Up to two hot-swappable power units			176-264 VAC, 60/50 Hz 36 .. 72 VDC Up to two hot-swappable power units
Operating temperature	from -10 to +45 °C			
Storage temperature	from -40 to +70 °C			
Operating humidity	no more than 80%			
Storage humidity	from 10% too 95%			
Dimensions (WxDxH, mm)	430x44x352		430x44x425	440x88x490
Weight	3.6 kg	5.5 kg	7 kg	12 kg
Average service life	at least 15 years			

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Features and capabilities

Plug-in interfaces
– USB 3G/4G/LTE modem (except ESR-1700)
– E1 TopGate SFP
– DialUp modem (only for ESR-21)

Remote Access VPN clients
– PPTP/PPPoE/L2TP/OpenVPN/IPsec XAUTH

Remote Access VPN server
– L2TP/PPTP/OpenVPN/IPsec XAUTH

Site-to-site VPN
– IPsec: «policy-based» and «route-based» modes
– DMVPN
– DES, 3DES, AES, Blowfish, Camellia encryption algorithms
– IKE MD5, SHA-1, SHA-2 message authentication

Tunneling
– IPoGRE, EoGRE
– IPIP
– L2TPv3
– LT (inter VRF-lite routing)

L2 functions
– Packet switching (bridging)
– STP, RSTP, MSTP 802.1D (only for ESR-1000)
– LAG/LACP (802.3ad)
– VLAN support (802.1Q)
– Port Isolation (only for ESR-1000)
– Private VLAN Edge (PVE) (only for ESR-1000)
– Logical interfaces
– LLDP, LLDP MED
– VLAN-based MAC

L3 functions (IPv4/IPv6)
– NAT, Static NAT, ALG
– Static routes
– Dynamic routing protocols RIPv2, OSPFv2/v3, BGP
– Route filtering (prefix list)
– VRF Lite
– Policy Based Routing (PBR)
– BFD for BGP, OSPF, static routes

Network security functions
– Intrusion Detection/Prevention system (IPS/IDS)[1]
– Web filtering by URL, by content (cookies, ActiveX, JavaScript)
– Zone-based Firewall
– Firewall filtering based on L2/L3/L4 fields and applications
– Support for access control lists on the base of L2/L3/L4 fields
– Protection from DoS/DDoS attacks and notification on them
– Logging of attack and rule triggering events

SLA control functions
– Eltex SLA
Channel parameters evaluation:
    – Delay (one-way/two-way)
    – Jitter (one-way/two-way)
    – Packet loss (one-way/two-way)
    – Packet Error Rate
    – Out-of-order delivery
– Wellink SLA (wiSLA)[1]

BRAS (IPoE)
– User termination
– White/black URL lists
– Quotas for traffic volume, session time, network applications
– HTTP/HTTPS Proxy
– HTTP/HTTPS Redirect
– Session accounting via Netflow protocol
– Interaction with AAA, PCRF
– Bandwidth management by offices, SSIDs and user sessions
– User authentication by MAC or IP address

IP addressing management (IPv4/IPv6)
– Static IP addresses
– DHCP client
– DHCP Relay Option 82
– Built-in DHCP server, support for options: 43, 60, 61, 150
– DNS resolver
– IP unnumbered

Quality of Service (QoS)
– Up to 8 priority queues per port
– L2 and L3 traffic prioritization (802.1p, DSCP, IP Precedence)
– RED, GRED congestion avoidance algorithms
– Precedence re-marking mechanisms
– Applying policies (policy-map)
– Bandwidth management (shaping)
– Hierarchical QoS
– Session tagging

Network reliability assurance means
– Dual homing (only for ESR-1000)
– VRRP v2,v3
– Route tracking based on VRRP state
– WAN interfaces load balancing, data stream redirection, channel switching during QoS control
– Firewall sessions backup

Management and monitoring
– Support for standard and extended SNMP MIB, RMONv1
– Built-in Zabbix agent
– User authentication through a local database via RADIUS, TACACS+, LDAP
– Protection from configuration errors, automatic configuration recovery. Ability to reset configuration to factory settings
– CLI
– Syslog support
– System resources usage monitoring
– Ping, traceroute (IPv4/IPv6), displaying information on packets in the console
– Firmware update, configuration upload and download via TFTP, SCP, FTP, SFTP, HTTP(S)
– NTP support
– Netflow v5/v9/v10 (exporting of URL statistics for HTTP, host for HTTPS)
– Local control via RS-232 (RJ-45)
– Remote control via Telnet, SSH (IPv4/IPv6)
– Displaying information on services/processes
– Local/remote router configuration storage

Functionality for firmware version 1.12.0
[1]Activated by the license

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Ordering information

Name	Description
ESR-10	Service router ESR-10, 4xEthernet 10/100/1000BASE-T, 2x1000BASE-X (SFP), 1xRS-232 (RJ-45), 2xUSB2.0, 2GB RAM, 512MB NAND-Flash, 12 VDC (220 VAC via power adapter).
ESR-12V	Service router ESR-12V, 8xEthernet 10/100/1000BASE-T, 1xRS-232 (RJ-45), 2xUSB2.0, 3xFXS, 1xFXO, 2GB RAM, 512MB NAND-Flash, 220 VAC.
ESR-12VF	Service router ESR-12VF, 8xEthernet 10/100/1000BASE-T, 1x1000BASE-X (SFP), 1xRS-232 (RJ-45), 2xUSB2.0, 3xFXS, 1xFXO, 2GB RAM, 512MB NAND-Flash, 220 VAC.
ESR-14VF[1]	Service router ESR-14VF, 8xEthernet 10/100/1000BASE-T, 1x1000BASE-X (SFP), 1xRS-232 (RJ-45), 2xUSB2.0, 4xFXS, 2GB RAM, 512MB NAND-Flash, 220 VAC.
ESR-20	Service router ESR-20, 2x10/100/1000BASE-T, 2xCombo 10/100/1000BASE-T/1000BASE-X (SFP), 1xUSB 2.0, 1xUSB 3.0, 1 slot for SD cards, Console, 4GB RAM, 4GB Flash, Built-in 220 VAC power module.
ESR-21	Service router ESR-21, 8x10/100/1000BASE-T, 4x10/100/1000BASE-X, 1xUSB 2.0, 1xUSB 3.0, 1 slot for SD cards, Console, Serial (RS-232), 4GB RAM, 4GB Flash, Built-in 220 VAC power module.
ESR-100	Service router ESR-100, 4xCombo 10/100/1000BASE-T/1000BASE-X SFP, 1xUSB 2.0, 1xUSB3.0, 1 slot for SD cards, 4GB RAM (8GB available upon a request), 1GB NAND-Flash, Built-in 220 VAC power module.
ESR-200	Service router ESR-200, 4x10/100/1000BASE-T, 4xCombo 10/100/1000BASE-T/1000BASE-X SFP, 1xUSB 2.0, 1xUSB3.0, 1 slot for SD cards, 4GB RAM (8GB available upon a request), 1GB NAND-Flash, Built-in 220 VAC power module.
ESR-1000	Service router ESR-1000, 24x10/100/1000BASE-T, 2x10GBASE-R SFP+, 2xUSB 2.0, 1 slot for SD cards, 4GB RAM (8GB available upon a request), 1GB NAND-Flash, 2 slots for 220 VAC or 48 VDC power modules.
ESR-1200	Service router ESR-1200, 4xCombo10/100/1000BASE-T/1000BASE-X, 8x10GBASE-R SFP+, 12x10/100/1000BASE-T, 2xUSB 2.0, 1 slot for SD cards, 4GB RAM (8GB available upon a request), 1GB NAND-Flash, 2 slots for 220 VAC or 48 VDC power modules.
ESR-1500	Service router ESR-1500, 4x10/100/1000BASE-T, 4xCombo 10/100/1000BASE-T/1000BASE-X, 4x10GBASE-R SFP+, 4GB RAM, 1GB NAND-Flash, 2 slots for 220 VAC power modules.
ESR-1700	Service router ESR-1700, 4xCombo 10/100/1000BASE-T/1000BASE-X, 8x10GBASE-R SFP+, 32GB RAM, 1GB SSD, 2 slots for 220 VAC or 48 VDC power modules.

Power modules[2]

Device	AC power module	DC power module
ESR-1000	PM160-220/12	PM100-48/12
ESR-1200	PM160-220/12	PM100-48/12
ESR-1500	PM160-220/12	—
ESR-1700	PM350-220/12	PM350-48/12

[1] The model is available upon a request
[2] Ordered separately